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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,703	06/21/2000	SHUICHI NAGATO	2000_0574A	3448

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09/09/2004

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EXAMINER

DOROSHENK, ALEXA A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/530,703

Applicant(s)

NAGATO ET AL.

Examiner

Alexa A. Doroshenk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 42-107 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 42-107 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/24/01; 12/6/02; 12/31/02; 4/8/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 72 and 73 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 72 recites the limitation "said heat recovery chamber" in lines 2-3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 73 recites the limitation "said heat recovery chamber" in lines 2 and 4 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 42-49, 55, 58, 63-66, 69-75, 79, 82, 87-89, 92-96, 100 and 103 are rejected under 35 U.S.C. 102(b) as being anticipated by Tang (5,365,889).

With respect to claims 42-45, 63-66, 87-89 and 92 Tang discloses a fluidized bed system comprising:

a reactor housing (20) divided by a plurality of partition walls (22 and 24) into a pyrolysis chamber (30)(reads on gasification as a gas is generated in this section), a combustion chamber (32) and a heat recovery chamber (34);

a revolving flow of fluidized medium of varied velocities/intensities in various regions are formed so as descending flows and upward flows of the fluidized medium are generated (see arrows in the figure and col. 4, line 61- col. 6, line 24);

a circulating flow of medium is formed between the pyrolysis chamber (30) and the combustion chamber (32) (see arrows and col. 4, line 61- col. 5, line 27) and travels through upper (22a) and lower (22b) openings in a first partition wall (22);

a circulating flow of medium is formed between the heat recovery chamber (34) can the combustion chamber (32) (see arrows and col. 6, lines 8-24) and travels through upper (24a) and lower (24b) openings in a second partition wall (24);

a heat transfer surface (66) within the fluidized be of the heat recovery chamber (34);

wherein oxygen is supplied to the bottom of the system (col. 3, lines 26-49)) (It is noted that the content of the fluidizing gas is not a structural limitation and therefor is not given any weight in the apparatus claim. An apparatus claim covers what a device is, not what a device does. MPEP 2114.) via diffusion devices such as distribution plates (52 a-d); and

the combustion chamber (32) and heat recover chamber (34) are integrated in a freeboard section (14) via opening (28a).

With respect to claims 46, 69, 70 and 93, Tang discloses a combustible material supply ports to said gasification furnace and fluidized bed (54, 58, 60).

With respect to claims 48, 49, 74, 75, 95 and 96 it has been discussed above, that Tang discloses wherein the fluidizing gas (which is air) is supplied to the bottom of the device. It is noted that the content or amount of the fluidizing gas is not a structural limitation and therefor is not given any weight in the apparatus claim. An apparatus claim covers what a device is, not what a device does. MPEP 2114.

With respect to claims 47, 71 and 94, Tang discloses wherein auxiliary fuel is supplied (64) to the weak fluidizing region (the lower portion) in the combustion chamber (32) (col. 4, lines 25-30).

With respect to claims 55, 79 and 100, the operational pressure of a device is not a structural limitation and therefor the claim continues to read on the apparatus of Tang. An apparatus claim covers what a device is, not what a device does. MPEP 2114.

With respect to claims 58, 82 and 103, Tang discloses wherein the reactor can be of a rectangular cross-section (figure 1 and col. 7, lines 33-36).

With respect to claim 72, Tang discloses wherein the various chambers are arranged in a straight line so that the gasification furnace and heat recovery section are completely separated from each other (see figure).

With respect to claim 73, Tang discloses wherein the reactor can be of a concentric formation wherein the vessels are co-axially disposed within each other (col. 7, lines 33-36). Such a formation would inherently result in an arrangement whereby

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the gasification and heat recovery chambers are completely separated from each other by a partition.

5. Claims 87-89 are rejected under 35 U.S.C. 102(b) as being anticipated by Pillai (EP 0 312 840 A1).

With respect to claims 87-89, Pillai discloses an apparatus comprising:

a fluidized bed furnace (12) divided by a partition wall (17) into a gasification section (14) and a combustion section (16); and

a revolving flow a fluidized medium (74) so as to form a descending flow and an upward flow between the gasification (14) and combustion (16) sections (col. 4, lines 25-33); and

a heat transfer surface (56) within said combustion furnace section (16).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 50-53, 67, 68, 76, 77, 90, 91, 97 and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claims 42, 63, 65, 87 and 88 above, and further in view of Nagato et al. (6,139,805).

With respect to claims 50, 52, 53, 67, 68, 76, 90, 91 and 97, Tang discloses a drain pipe (62) provided at the bottom of the chambers, but does not disclose wherein it is specifically located between the pyrolysis and combustion chambers and/or between the combustion and heat recovery chambers.

Nagato et al. teaches a similar fluidized bed combustion/gasifying device with fluidizing sections (8 and 18) separated by partitions (34) as well as heat recovery means (24). The material discharge port (28) of Nagato et al. is located between the fluidized sections (below the partitions (34)) (see figure 6). Nagato et al. also discloses wherein this location has an advantage of not allowing incombustible material to form on the heat recovery means so that the device can be operated continuously without malfunction and then used to combust industrial wastes (col. 7, lines 24-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to alter the location of drainage in the device of Tang in the manner of Nagato et al. in order to ensure continuous operation of the device and to allow for greater use in the materials to be processed.

With respect to claims 51, 77 and 98, Tang does disclose wherein the furnace bottom (see figure) is inclined downwardly toward the material discharge pipe (62).

Additionally, Nagato et al. also show the bottom having a downward inclination (3 and 4) toward the discharge port (28) (figure 6) (col. 5, lines 51-56).

9. Claims 54, 57, 78, 81, 99 and 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claims 42, 63 and 87 above, and further in view of Nagato et al. (5,513,599).

With respect to claims 54, 78 and 99, Tang does not disclose a secondary air injection into the freeboard section of the furnace.

Nagato et al. discloses a similar fluidized bed combustion device and teaches having an air inlet (34) provided in the freeboard (31) of the device in order to enable two-stage combustion (col. 15, lines 17-20) so that unburned combustible materials in the gas are combusted (col. 4, lines 37-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an air inlet in the freeboard of the device of Tang in order to enable two-stage combustion as taught by Nagato et al.

With respect to claims 57, 81 and 102, Tang does not disclose wherein the device is housed in a pressure vessel. Tang does disclose that the reactor maybe modified to incinerate other waste materials (col. 7, lines 46-48).

Nagato et al. discloses a similar fluidized bed combustion device (2) for coals, petro coke, or the like, which is required to operate in a pressure vessel (1) (col. 1, lines 8-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a pressure vessel, as taught by Nagato et al., surrounding the fluidized bed combustion device of Tang when the device is to be used

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for processing coals, petro coke or like materials, such as those taught by Nagato et al., in order to meet the pressure conditions required for fluidized bed combustion of such materials.

10. Claims 56, 80 and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claims 42, 63 and 87 above, and further in view of Ahland et al. (4,833,877).

With respect to claims 56 and 80, it is first noted that the operational pressure of a device is not a structural limitation. An apparatus claim covers what a device is, not what a device does. MPEP 2114.

Tang does not disclose wherein the gases discharged from the furnace are cooled, dedusted and introduced to a gas turbine.

Ahland et al. teaches wherein gases from gasification can be combined with a gas turbine to produce electricity (col. 1, lines 9-16). The gases are cooled (1) then dedusted (3) and sent to a gas turbine (8) (col. 4, lines 32-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide cooling, dedusting and a gas turbine for the gases of the device of Tang in order to make use of the product of Tang's device in another application, the generation of electricity.

11. Claims 59-62, 83-86 and 104-107 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claims 42, 63 and 87 above, and further in view of Fujimura et al. (5,922,090).

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With respect to claims 59-61, 83-85 and 104-106 Tang does not disclose wherein the gas from the gasification furnace is blown into a slagging furnace and quenched in a water chamber.

Fujimura et al. teaches wherein gases from a gasification furnace can be used in a slag furnace and then materials are quenched in a water chamber (col. 16, lines 33-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the gases generated in the gasification furnace of Tang in the furnace of Fujimura et al. since it is merely a means by which to make further use of a product generated by Tang.

With respect to claims 62, 86 and 107, Fujimura et al. further discloses wherein the furnace is cooled by a waste heat boiler (col. 15, lines 40-42)


Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexa A. Doroshenk
Examiner
Art Unit 1764